Solutions for Demanding Applications

VarTech Systems Inc.

Industrial Flat Panel Displays

VT190 DiamondVue/CrystalVue Series

19.0” Flat Panel Series LCD Monitors

VT190P2 · VT190PS2 · VT190R2 · VT190PHB2 · VT190PSHB2 · VT190C2 · VT190CHB2 · VT190W2 · VT190WS2 · VT190WHB2 · VT190WSHB2

VT190M2 – VT190MHB2

User’s Guide

Read these instructions completely before attempting to operate your new LCD Color Display.

Table Of Contents

	Page		Page
Section 1		Section 4	
Introduction	3	Touch screen	10
1.1 VT190 Series Features	3	4.1 Touch Screen Introduction	10
1.2 Product Safety Precautions	3	4.2 Touch Screen Installation	10
Section 2		Section 5	
Display Setup	4	5.1 Troubleshooting	11
2.1 Inspection	4		
2.2 Unpacking	4	Section 6	
2.3 Included Parts	4	6.1 Cleaning & Maintenance	12
2.4 Connecting The Display	4		
2.5 Video Input Connections	5	Section 7	
		Mounting Instructions	13
Section 3		7.1 Panel Mount Procedure	13
Getting Started	6		
3.1 Adjusting the Display	6-9	Specifications	14-15
		Mechanical Drawings	16-23

INTRODUCTION

SECTION 1

1.1 VT190 Series Features

The VT190 Series is capable of displaying 16.8M colors in a continuous spectrum.

The VT190 Series provides a standard VGA input, a DVI-I input, an S-Video input, and a Composite input.

The VT190 Series is auto synchronous adjusting the display to the appropriate VGA input.

The VT190 Series is available in Chassis Mount, Panel Mount, Wall Mount, and Rack Mount configurations.

The VT190 Series is supplied with an Anti-Reflective Screen unless equipped with an optional Touch System.

The VT190 Series has either 110/220VAC input or optional +12V jack supply as standard.

1.2 Product Safety Precautions

- Ensure that sufficient space is available around the display to provide the circulation necessary for cooling.
- Ensure that the ambient air temperature will not exceed the specified maximum temperature.
- Do not attempt to service this display yourself. The rear chassis has a seal so that non qualified personnel will not expose themselves to dangerous voltages or other risks.
- To protect from electrical shock, unplug the display power supply from the wall before moving.
- Do not expose the display to direct sunlight or heat.
- Do not use this display near water.
- Do not place any heavy objects on the power cords. Damage may cause electrical shock.
- Unplug the power supply from the wall or unit if one of the following conditions exists:
  - Power cord or plug is damaged or frayed.
  - Liquid is spilled onto the display or the display is exposed to rain or water.
  - The display does not operate normally when the operating instructions are followed.
  - The display has been dropped or the enclosure has been damaged.
  - The display exhibits a distinct change in performance, indicating a need for service.

DISPLAY SETUP

SECTION 2

2.1 Inspection of your VT190 display

The VT190 is supplied with different accessories depending on the model configuration purchased. Verify the VT190 and accessories are what were ordered. Contact your Vartech salesperson should there be any discrepancies.

2.2 Unpacking and setting up your VT190 display

Your LCD monitor package will consist of the components listed below. Open shipping container and place all the components on a flat clean surface.

2.3 What is included with your VT190 display

VT190 LCD Monitor.
VGA Video Cable.
Power Cable for AC input (optional DC cable for DC input voltage).
Users Manual CDROM
Mounting Hardware, 10-32 Locking Nuts . (for Panel Mount units only)
Touch Interface Cable, Serial or USB (Optional when touch is installed)
CDROM with Touch Screen Drivers (Optional when touch is installed)

2.4 Connecting the VT190 display

1. Connect all cables to the computer first. This would include the VGA Video cable and any optional touch interface cable, serial or USB.
2. After connecting the cables between the LCD monitor and the computer, connect the Power Cable to the display and the customer supplied DC voltage source. Check the display unit label to determine the correct DC voltage.
3. Turn the DC voltage source on. The display will be active.
4. Turn on your computer. The display should now operate showing your OS or the video that is being supplied to the flat panel.

Note: If for any reason the display goes blank and gives an “Out of Range” or “No Input Signal”, your computer or video source is supplying a signal that is “out of range” of the LCD’s video board. If this happens, reboot the computer or video source and make sure you are supplying the correct video resolution and refresh signal. If the display doesn’t work properly, it may be because:

- The resolution is too high or low for the LCD.
- The refresh rate is set too high. Set the refresh rate to 60Hz.
- The power source is incorrect.
- The unit is malfunctioning. If you believe this to be true, disconnect the video cable from the LCD display and connect to a known working display. If the display is working satisfactory and the video is within the appropriate range, then contact Vartech Customer service for a RMA number at 800-223-8050.

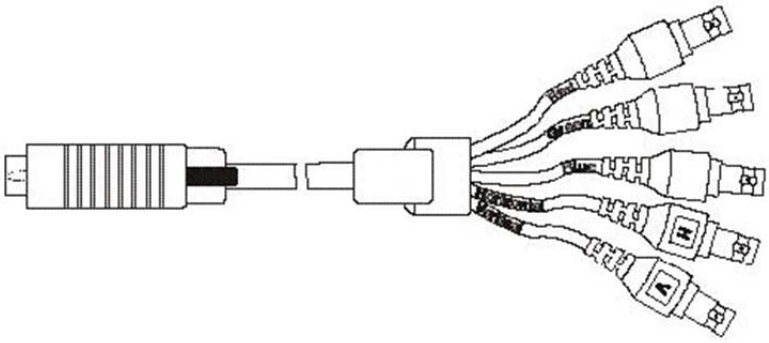
2.5 Input Video Connections

The VT190 Series provides four industry standard video inputs:

- Analog RGB (VGA) with auto detect of Digital Separate Sync, Sync-On-Green, and Composite Sync. Auto detects from VGA to UXGA, interlaced and non-interlaced video.
- DVI-D with auto detect of Digital Separate Sync.
- S-Video for 4 wire video
- Composite for NTSC, PAL, and SECAM video (interlaced)

Optional BNC Adaptor Cable

A HD15 (VGA)-to-5xBNC adapter cable is available. The functions of the cables are described below.
The R (Red), G (Green), and B (Blue) input connectors for color.
The HS/CS: Separate horizontal/composite sync signal from the video source.
The VS: Separate vertical sync signal from the video source.



BNC Adapter Cable
This table describes the signal types you can use with the connectors:

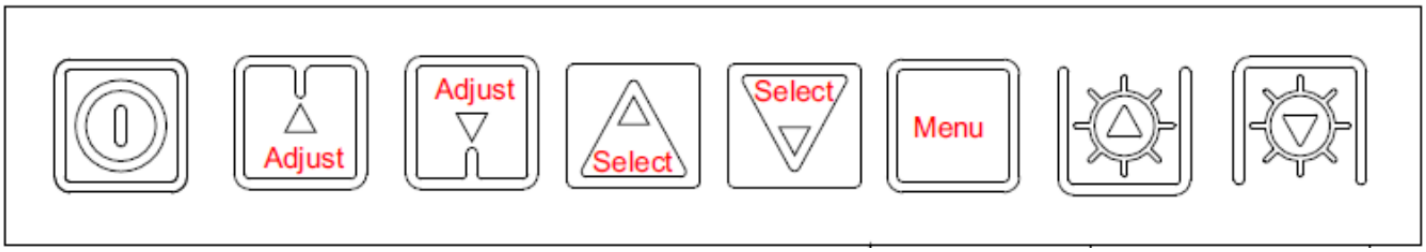
	BNC Signal Types					
BNC Signal Type	Description	R	G	B	HS/ CS	VS
Sync-on-Green	Use the three video connectors. Horizontal and vertical syncs are supplied on the green video line.	X	X	X		
Composite Sync	Use the three video connectors plus the horizontal sync/ composite sync input	X	X	X	X	
Separate Horizontal and Vertical Sync.	Use the three video connectors plus the horizontal sync/ composite sync and vertical sync input.	X	X	X	X	X

GETTING STARTED

SECTION 3

3.1 Adjusting the display

Membrane Controls



Controls	Analog VR type	Digital type
On/Off – turns controller board power on	VR toggle switch	On/Off button
Brightness – controls backlight brightness	Rotary VR	Brightness +/- buttons
Menu – turns OSD menu On or Off (it will auto time off) (Function with signal input only)	Menu button	Menu button
Select – Select function / Confirm (under OSD menu on state)	SEL DN	SEL DN
Move up to select individual RGB color level OSD page (under OSD menu on state)	SEL UP	SEL UP
+ – increase the setting / moves the selector to the next function (under OSD menu on state)	+	+
- - decrease the setting / moves the selector to the previous function (under OSD menu on state)	-	-
Load factory default	Press and hold SEL DN button to power on the controller	Press and hold SEL DN button to power on the controller
Lock OSD menu (Function with signal input only)	Press and hold MENU button for 15 seconds to enable / disable lock of the OSD menu	Press and hold MENU button for 15 seconds to enable / disable lock of the OSD menu
Switch to next input source (under OSD menu off state)	+	+

3.2 OSD Adjustments

Picture :

Volume Increase/decrease volume level, total 31 steps

Brightness Increase/decrease panel brightness level, total: 100 steps

Contrast Increase/decrease panel contrast level, total: 100 steps

Hue * Increase/decrease Hue level, total: 100 steps

Saturation * Increase/decrease saturation, total: 100 steps

Sharpness Increase/decrease sharpness, total: 15 steps

Aspect Size ▸

Aspect Ratio : Fill Screen / Fill Aspect / 1 to 1 (UNDER ARGB / DVI mode)

Auto / Fill Screen / 1 to 1 / Anamorphic (UNDER VIDEO MODE)

- Fill Screen : Enable full screen expansion for lower resolution Image
- Fill Aspect : Enable fill screen expansion for lower resolution image according to aspect ratio
- 1 to 1 : Display the exact image resolution on the screen without image expansion.

Horz Position Move the image position horizontally

Vert Position Move the image position vertically

Blue Only : OFF / ON : Turn off the "Red" & "Green" channel (i.e output all zero to Red & Green channel)

* : DISPLAY IN VIDEO MODE ONLY

Main Source : Select the input video signal

VGA 1 / Composite Video / S-Video / VGA 2 / DVI **/** HD/SD Component

Utilities :

Setup ▸

Auto Picture Setup# ▸ : Auto adjust the image position, phase and size

Auto Color Gain# ▸ : Auto Color Calibration (Function in ARGB mode ONLY – See appendix IV)

Manual Clock# : Adjust the image horizontal size

Manual Phase# : Fine tune the data sampling position (adjust image quality)

Auto Source Seek : OFF / ON

ON – Auto source select always enable

OFF – Disable auto source select function

Auto Power : OFF / ON

ON – Enable soft power off function if absence of input signals

OFF – Disable soft power function

Video Standard (SD)** : Auto / NTSC / PAL / SECAM / NTSC 443

Gamma : 1.0 / 1.6 / 2.2

OSD ▸

H Position : Move the OSD menu image horizontally

V Position : Move the OSD menu image vertically

Timeout (sec) : 1 – 20 : Adjust the OSD menu timeout period in a step of 1 seconds (max 20 seconds)

Language : English / Simplified Chinese : Select OSD menu language display

Transparency : 0 – 100 steps

	Color Temperature ‣ Color Temp : 9300K / 8000K / 6500K / 5000K Red : Green : Blue : **Hot Key** ‣ Hot key 1 : Brightness / Contrast / Input / Aspect / Volume Hot key 2 : Brightness / Contrast / Input / Aspect / Volume **Reset to Factory Defaults** ‣ Factory Defaults Reset Color Gain# DDC Updates ** : FUNCTION IN VIDEO MODE ONLY # : DISPLAY AND FUNCTION IN VGA MODE ONLY

Exit the OSD menu to save the setting chosen

TOUCHSCREEN

SECTION 4

4.1 Introduction

Touch screens are a common means to interface operator inputs to a system. The universal standard of Windows GUI (Graphical User Interface) has significantly increased the use of touch screens.

There are five main touch technologies. The technologies are resistive, surface acoustic wave (SAW), capacitive, infrared (IR), and projective capacitive. Each touch technology has advantages and disadvantages based on different user applications.

4.2 Installation

All Vartech Systems displays configured with a touch screen are supplied with a CDROM which includes user manuals, application software, and drivers for various operating systems. Insert the supplied CDROM into a CDROM drive and follow the installation instructions that will appear on the screen.

Technical support is available by contacting Vartech Systems customer support at 800-223-8050.

TROUBLESHOOTING

SECTION 5

5.1

General
A general guide to troubleshooting a flat panel display system it is worth considering the system as separate elements, such as: Controller (jumpers, PC settings) Panel (controller, cabling, connection, panel, PC settings) Backlight (inverter, cabling, backlight tubes) Cabling Computer system (display settings, operating system) Through step by step cross checking with instruction manuals and a process of elimination to isolate the problem it is usually possible to clearly identify the problem area.

No image:
If the panel backlight is not working it may still be possible to just see some image on the display. A lack of image is most likely to be caused by incorrect connection, lack of power, failure to provide a signal or incorrect graphic card settings.

Image position:
If it is impossible to position the image correctly, i.e. the image adjustment controls will not move the image far enough, then test using another graphics card. This situation can occur with a custom graphics card that is not close to standard timings or if something is in the graphics line that may be affecting the signal such as a signal splitter (please note that normally a signal splitter will not have any adverse effect).

Image appearance:
A faulty panel can have blank lines, failed sections, flickering or flashing display, incorrect graphics card refresh rate, resolution or interlaced mode will probably cause the image to be the wrong size, to scroll, flicker badly or possibly even no image. Incorrect jumper settings on the controller may cause everything from total failure to incorrect image. CAUTION: Do not set the panel power input incorrectly. Sparkling on the display: faulty panel signal cable.

Backlight:
Items to check include: Power input, Controls, Inverter and Tubes generally in this order. If half the screen is dimmer than the other half: Check cabling for the inverter. For a specific backlight tube check the AC pins orientation (CAUTION: Never reverse any DC power pins). Also: If adjusting brightness control has no effect the chances are that the VR rating or method of adjusting brightness is not compatible or correctly connected to the inverter. If system does not power down when there is a loss of signal
Continued failure:
If unit after unit keeps failing consider and investigate whether you are short circuiting the equipment or doing something else seriously wrong.

Generally after common sense issues have been resolved we recommend step by step substitution of known working parts to isolate the problem.

MAINTENANCE

SECTION 6

6.1 Cleaning

Occasionally clean the display panel and cabinet with a soft cloth dampened (not soaked) with a mild (non-abrasive) glass cleaner. Keep turning a fresh side of the cloth toward the screen surface to avoid scratching it with accumulated grit.

Note: The solvent should be applied only to the cloth, and not directly on the monitor screen.

Do not use paper products as they may scratch the surface. To minimize the risk of abrasion, allow the screen to stand dry. Special care should be taken when cleaning a touch screen or polycarbonate shield that is installed over the screen. Abrasive and certain chemical cleaners can easily damage the surface. Never use alcoholic or ammoniac cleaners to clean the polycarbonate shield or a touch screen.

Note: For best results cleaning a monitor with the optional antireflective tempered glass display shield, a solution of denatured alcohol is recommended to thoroughly clean the display.

Replacing a Line Cord
To avoid shock and fire hazards, the monitor's power cord should be replaced if the insulation becomes broken or if it develops a loose internal connection.

Other Maintenance
Qualified service personnel should perform all maintenance, except for the power cord replacement described above.

MOUNTING INSTRUCTIONS

SECTION 7

7.1 Panel Mount Procedure

Mechanical Drawings		
Model	**Description**	**Page(s)**
VT190P2	19" DiamondVue/CrystalVue Panel Mount Drawing (Nema 4)	16, 17
VT190C2	19" DiamondVue/CrystalVue Open Frame Drawing	18, 19
VT190W2	19” DiamondVue/CrystalVue Wall/Vesa Mount Drawing	20
VT190R2	19” DiamondVue/CrystalVue Rack Mount Drawing	21
VT190PSS	19” DiamondVue/CrystalVue Panel Mount SS Drawing (Nema 4x)	22-23
VT190M2	19” DiamondVue/CrystalVue Table Top Drawing	24

1. Cut and drill the panel (refer to panel mount drawing). Measurements are in inches.
2. If access to the side of the monitor is not available following installation, attach the power and video cables to the side of the monitor at this time.
3. Install the monitor in the prepared cutout.
4. Install the lock nuts and washers, supplied with the monitor, behind the holes running along the sides and top/bottom of the cutout in the panel. Extra lock nuts and washers are provided.

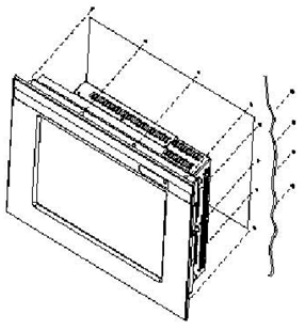
Note:
Use #10-32 nuts for mounting.

5. Tighten all mounting nuts evenly to a torque of 24 inch-pounds.

ATTENTION: Mounting nuts must be tightened to a torque of 24 inch-pounds to provide panel seal and avoid potential damage. Vartech Systems assumes no responsibility for water or chemical damage to the monitor or other equipment within the enclosure due to improper installation.

6. Attach the power and video cables to the side of the monitor if you have not already done so.

Generic Panel Mount Diagram

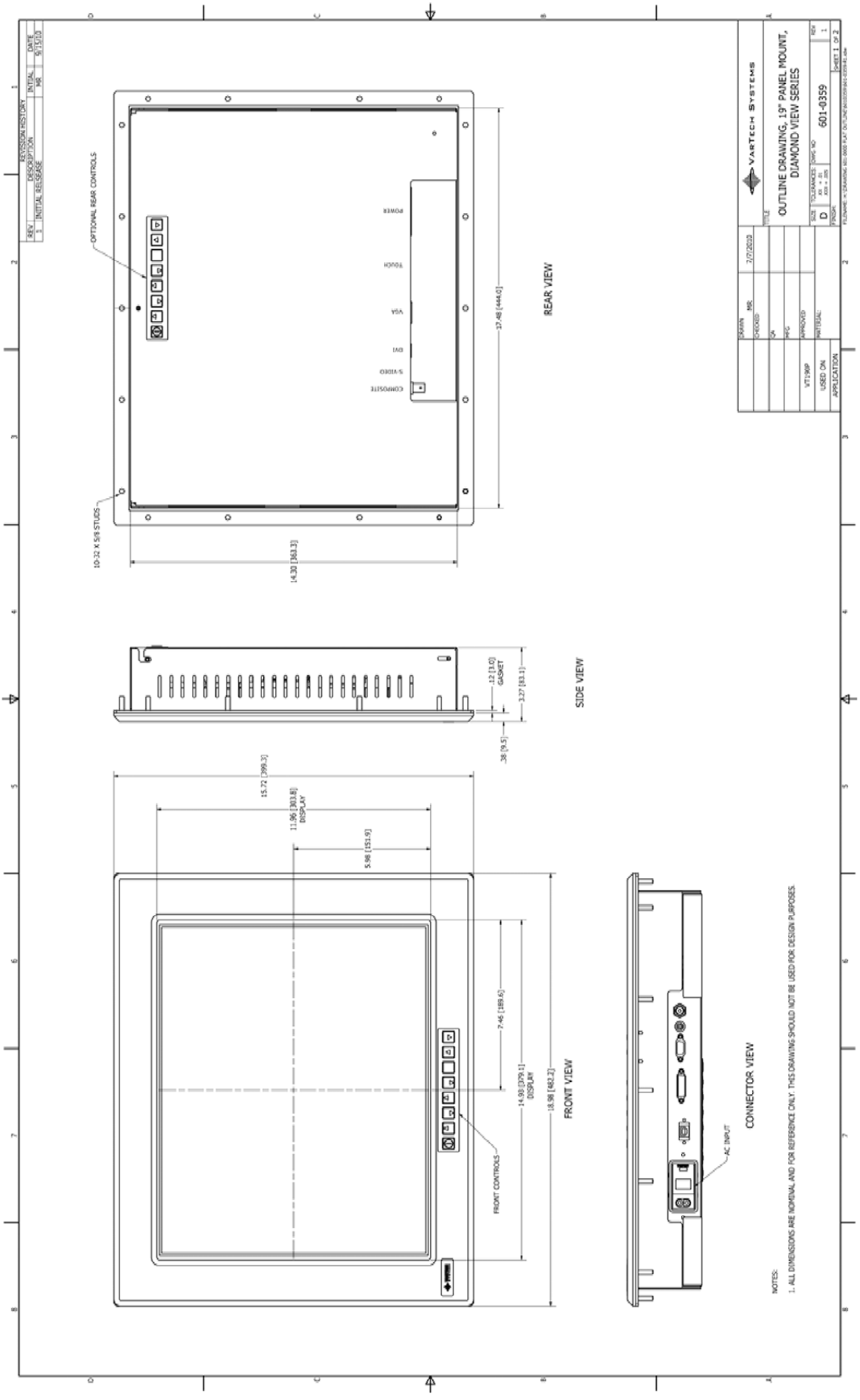


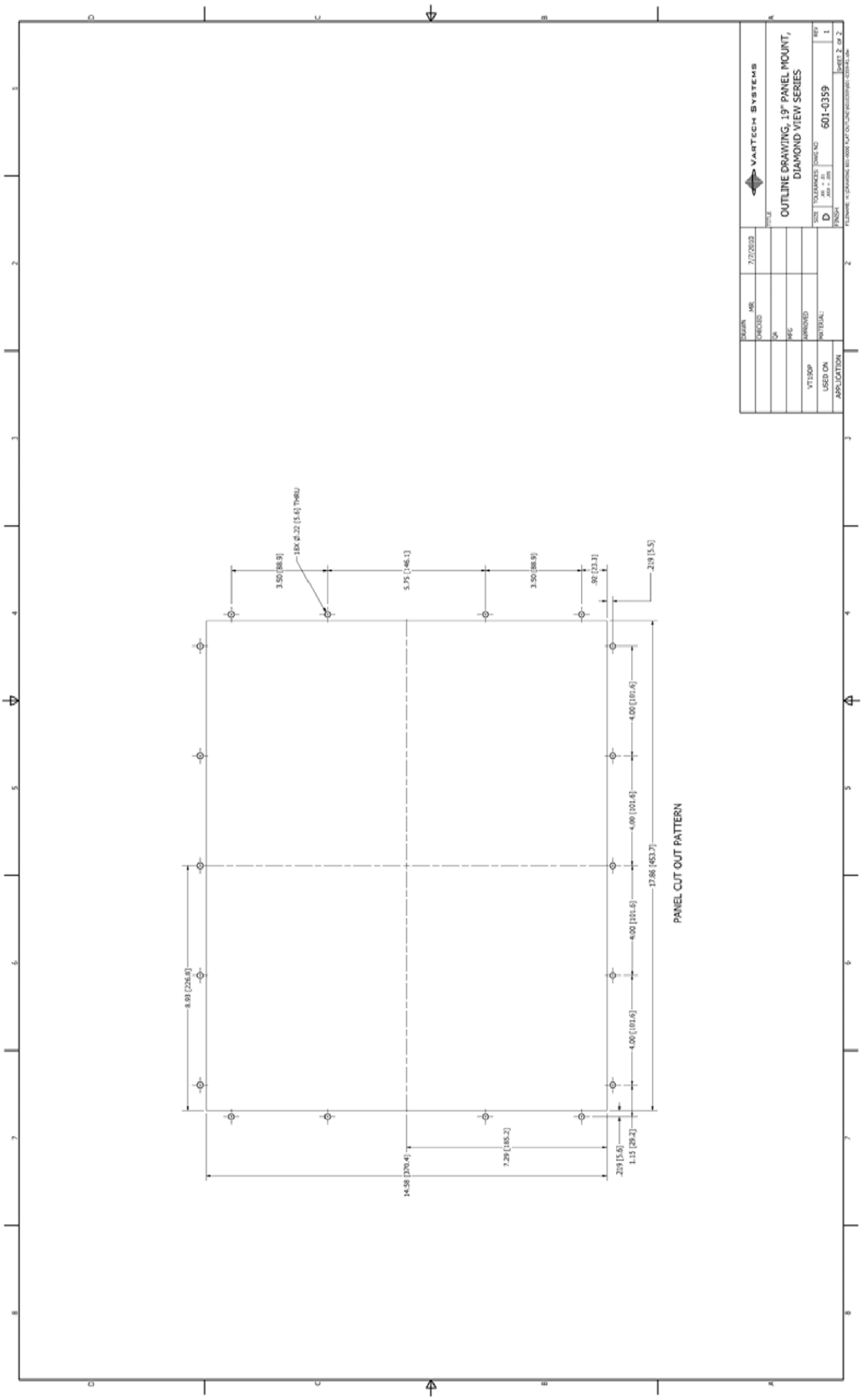
SPECIFICATIONS

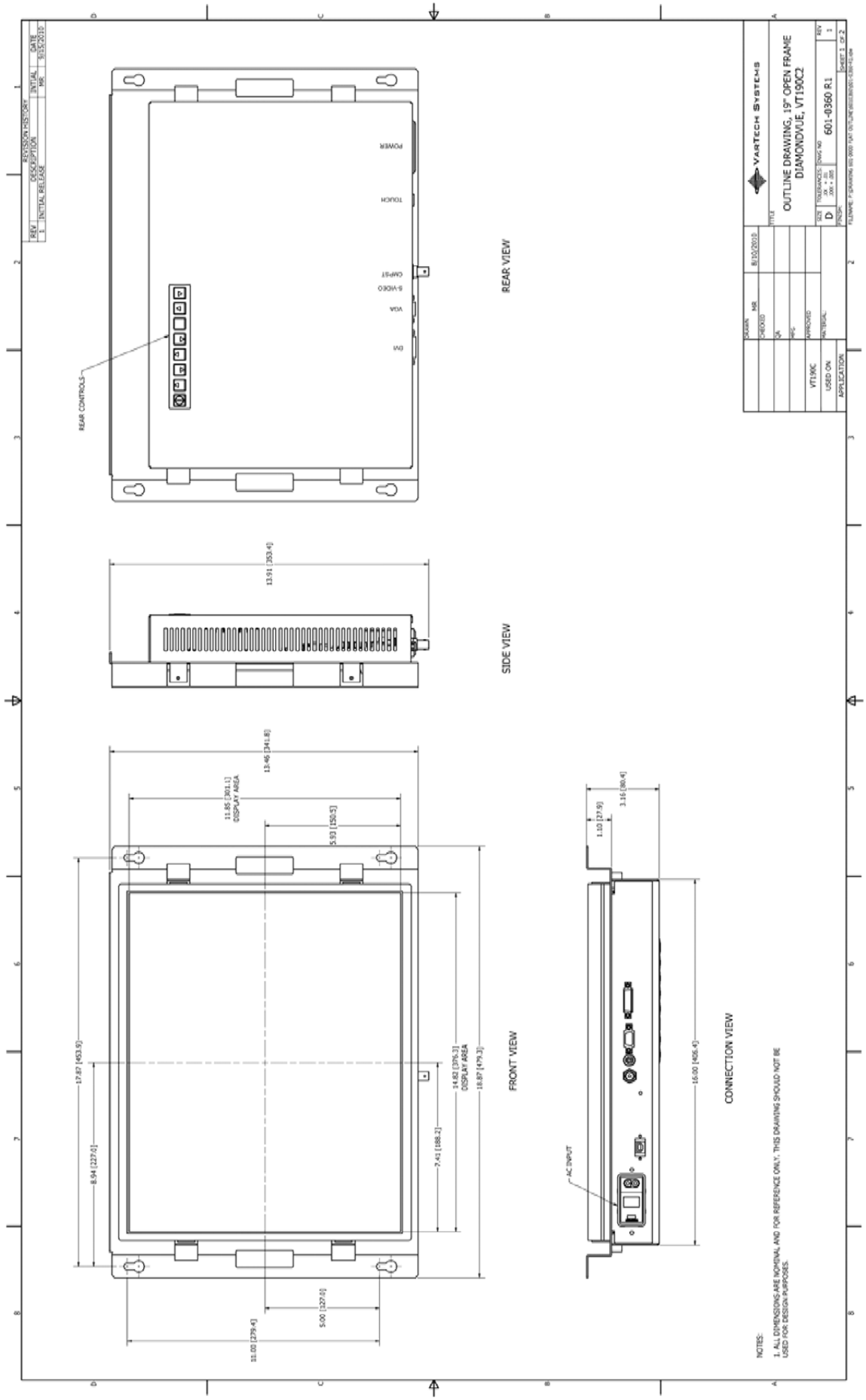
ENGINEERING SPECIFICATIONS – DiamondVue	
Panel Size	19.0” (48.26cm)
Type	Active Matrix Color Thin Film Transistor (TFT)
Native Panel Resolution	SXGA
Pixel Format	1280x3 RGB (H) x 1024 (V)
Pixel Pitch	0.294 per one triad (H) x 0.294 (V) mm
Pixel Arrangement	RGB (Red dot, Green dot, Blue dot) vertical stripe
Active Display Area	14.816” x 11.853” 376.320mm x 301.056mm
Viewing Angle (Left/Right)	89/89^{o} (typ.)
Viewing Angle (Up/Down)	89/89^{o} (typ.)
Color Gamut	TCO03 Compliance
Brightness	300 Nits (typ.)
Contrast Ratio	1300:1 (typ.)
Response Time	8ms (typ.)
Back Lights	4 CCFL rated 50,000 Hrs.
Video Connectors	Analog VGA (DB-15), Composite (BNC), DVI-I, Four Pin Mini-Pin (S-VIDEO)
Colors Supported	16,777,216 (RGB 6-bit + Hi-FRC data)
Video Input	Analog 0.7v p-p, TTL
Sync	Separate H & V, Combined, SOG
Input Voltage	110/220VAC (+12VDC optional)
Power consumption	40 Watts
Temperature	Operating: 0 to 50ºC
	Storage: -20 to 60ºC
Humidity	Operating: 10 to 95%NC
	Storage: 10 to 95%NC
Operating Altitude	Operating: Up to 10,000 ft
	Storage: Up to 40,000 ft

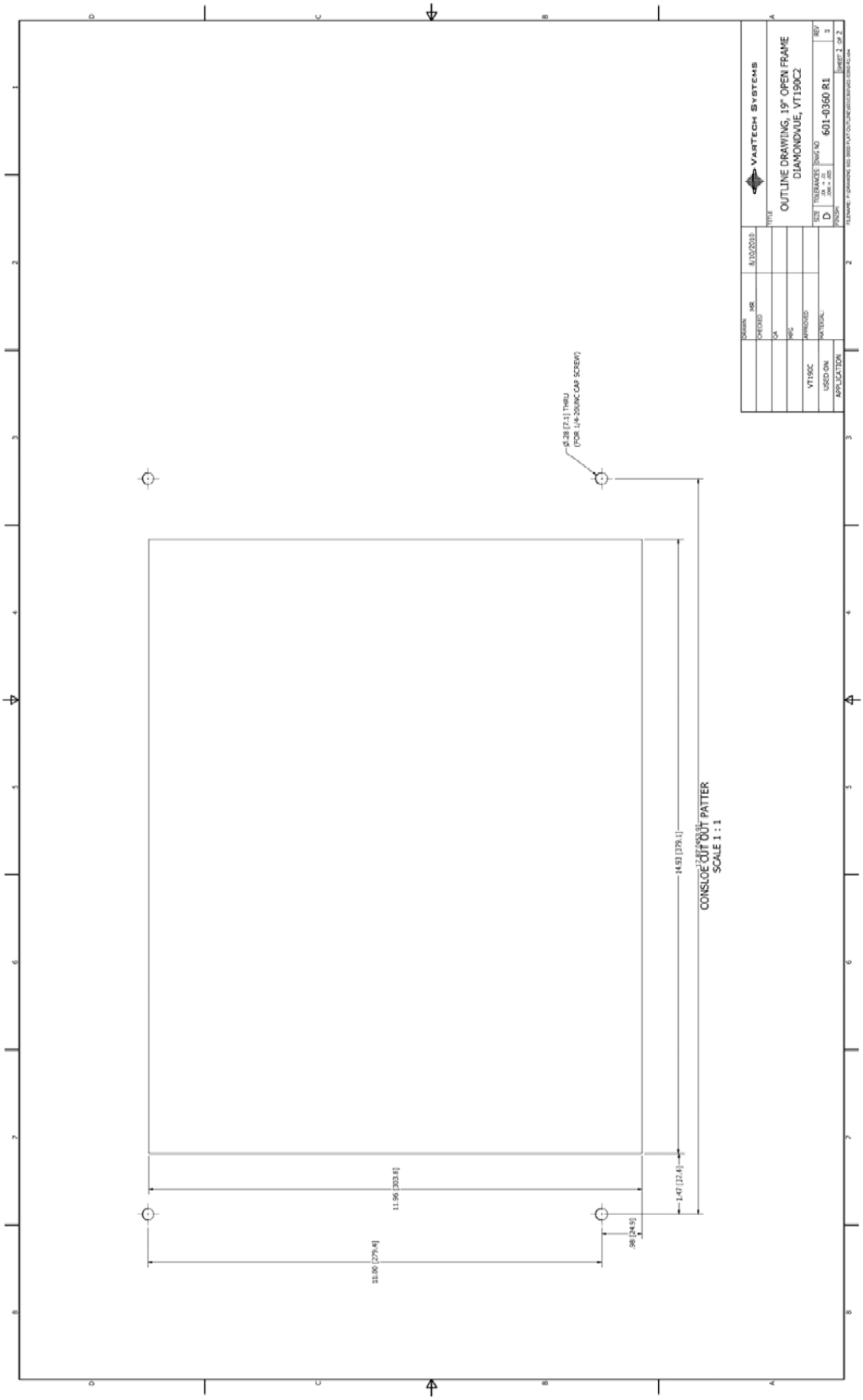
SPECIFICATIONS

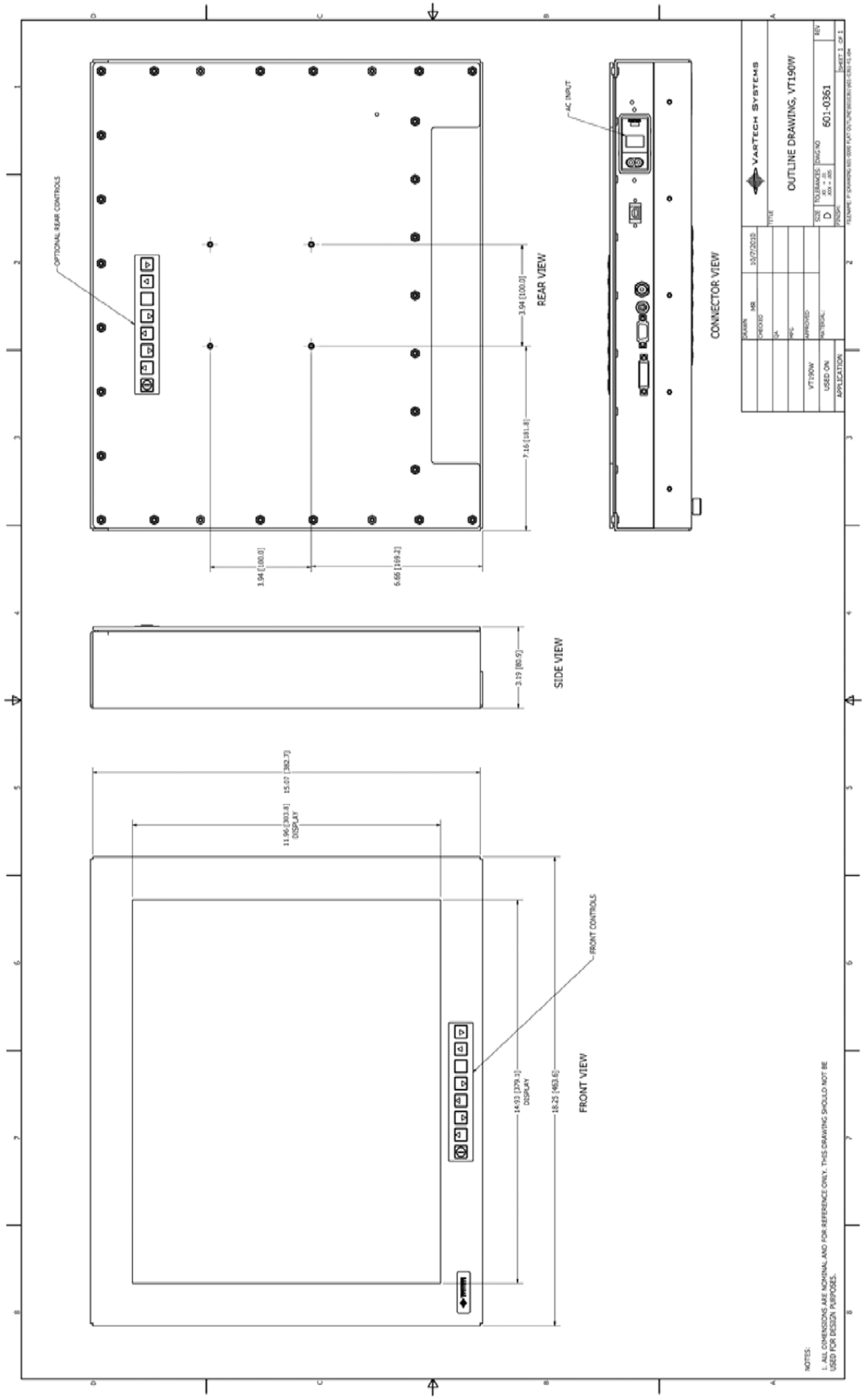
ENGINEERING SPECIFICATIONS – CrystalVue	
Panel Size	19.0” (48.26cm)
Type	Active Matrix Color Thin Film Transistor (TFT)
Native Panel Resolution	SXGA
Pixel Format	1280x3 RGB (H) x 1024 (V)
Pixel Pitch	0.294 per one triad (H) x 0.294 (V) mm
Pixel Arrangement	RGB (Red dot, Green dot, Blue dot) vertical stripe
Active Display Area	14.816” x 11.853” 376.320mm x 301.056mm
Viewing Angle (Left/Right)	89/89^{o} (typ.)
Viewing Angle (Up/Down)	89/89^{o} (typ.)
Color Gamut	TCO03 Compliance
Brightness	1000 Nits (typ.)
Contrast Ratio	1300:1 (typ.)
Response Time	8ms (typ.)
Back Lights	2 LED Rail rated 70,000 Hrs.
Video Connectors	Analog VGA (DB-15), Composite (BNC), DVI-I, Four Pin Mini-Pin (S-VIDEO)
Colors Supported	16,777,216 (RGB 6-bit + Hi-FRC data)
Video Input	Analog 0.7v p-p, TTL
Sync	Separate H & V, Combined, SOG
Input Voltage	110/220VAC (+12VDC optional)
Power consumption	60 Watts
Temperature	Operating: -10 to 50ºC
	Storage: -20 to 60ºC
Humidity	Operating: 10 to 95%NC
	Storage: 10 to 95%NC
Operating Altitude	Operating: Up to 10,000 ft
	Storage: Up to 40,000 ft

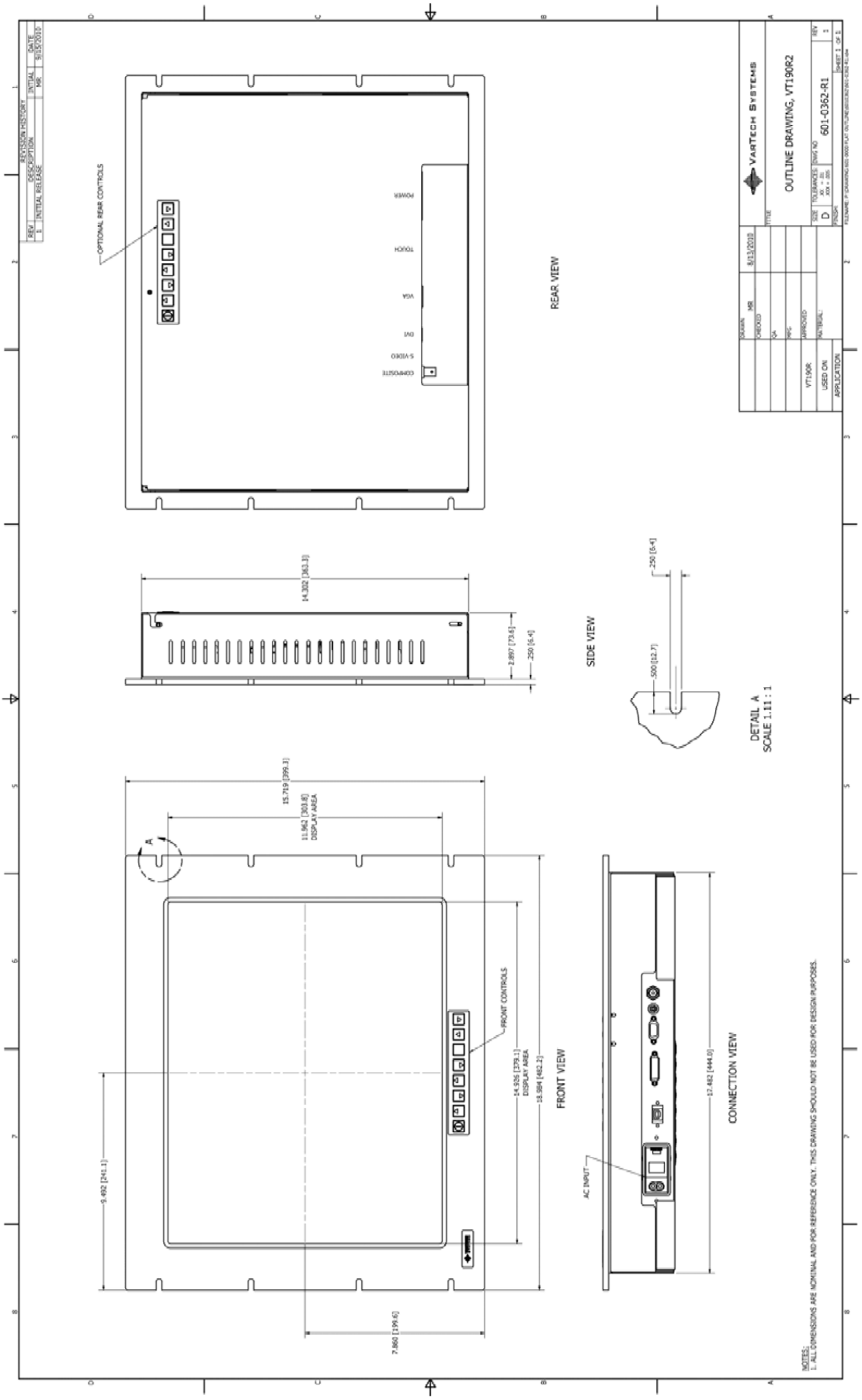

REAR VIEW
SIDE VIEW
FRONT VIEW
CONNECTOR VIEW
OPTIONAL REAR CONTROLS
10-32 X 5/8 STUDS
14.30 [363.3]
17.48 [444.0]
POWER
TOUCH
VGA
DVI
S-VIDEO
COMPOSITE
.12 [3.0] GASKET
.38 [9.5]
1.27 [32.1]
15.72 [399.3]
11.96 [303.8] DISPLAY
5.98 [151.9]
7.46 [189.6]
14.90 [379.1] DISPLAY
18.98 [482.2]
FRONT CONTROLS
AC INPUT
NOTES:
1. ALL DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY. THIS DRAWING SHOULD NOT BE USED FOR DESIGN PURPOSES.
VARTECH SYSTEMS
OUTLINE DRAWING, 19" PANEL MOUNT, DIAMOND VIEW SERIES
601-0359
REV 1
SHEET 1 OF 2
DRAWN MR 2/7/2020
CHECKED
QA
MFG
APPROVED
MATERIAL
VT190P
USED ON
APPLICATION
REVISION HISTORY
REV 1 DESCRIPTION INITIAL RELEASE INITIAL MR DATE 6/15/10

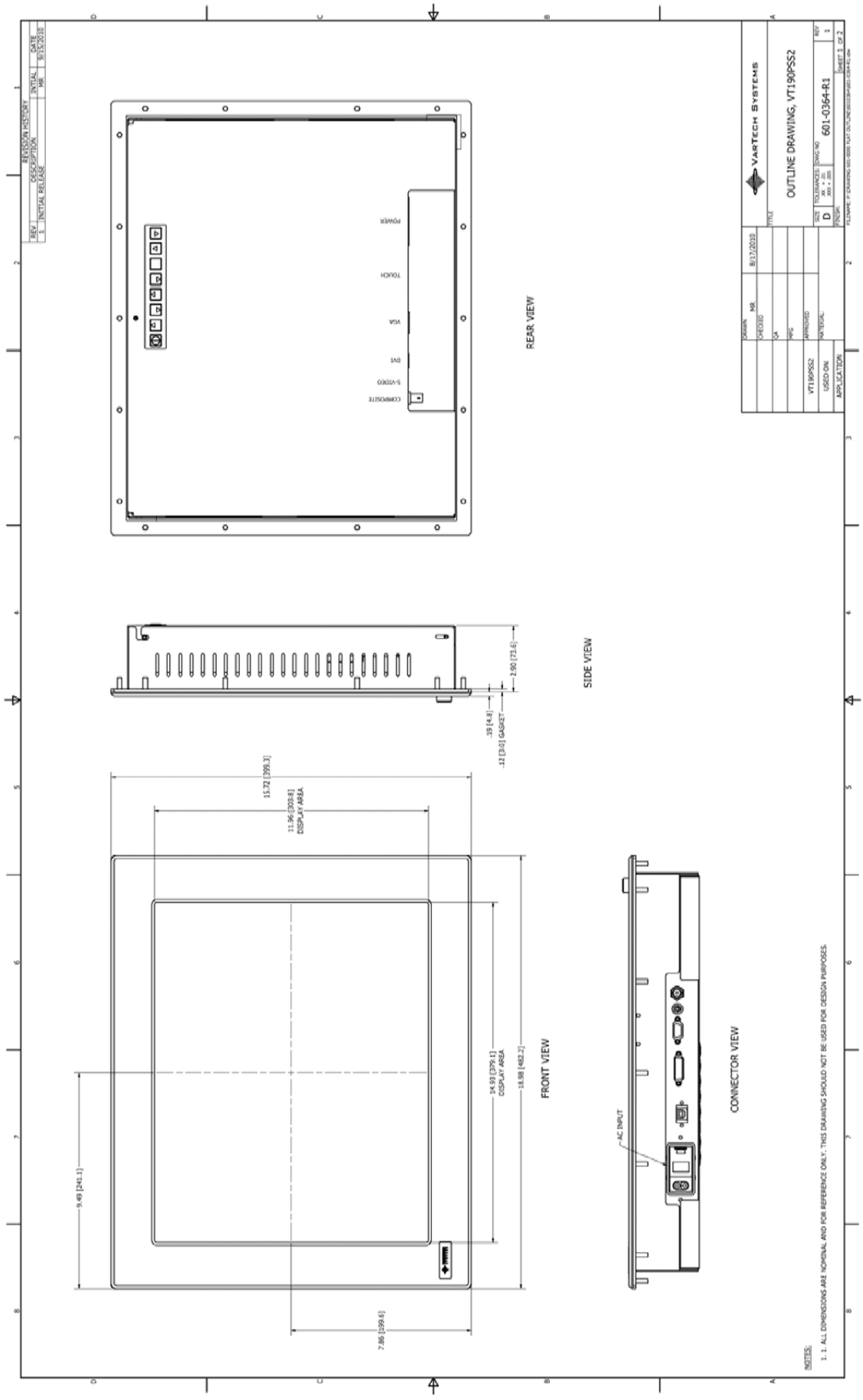

VARTECH SYSTEMS
OUTLINE DRAWING, 19" PANEL MOUNT, DIAMOND VIEW SERIES
601-0359
PANEL CUT OUT PATTERN

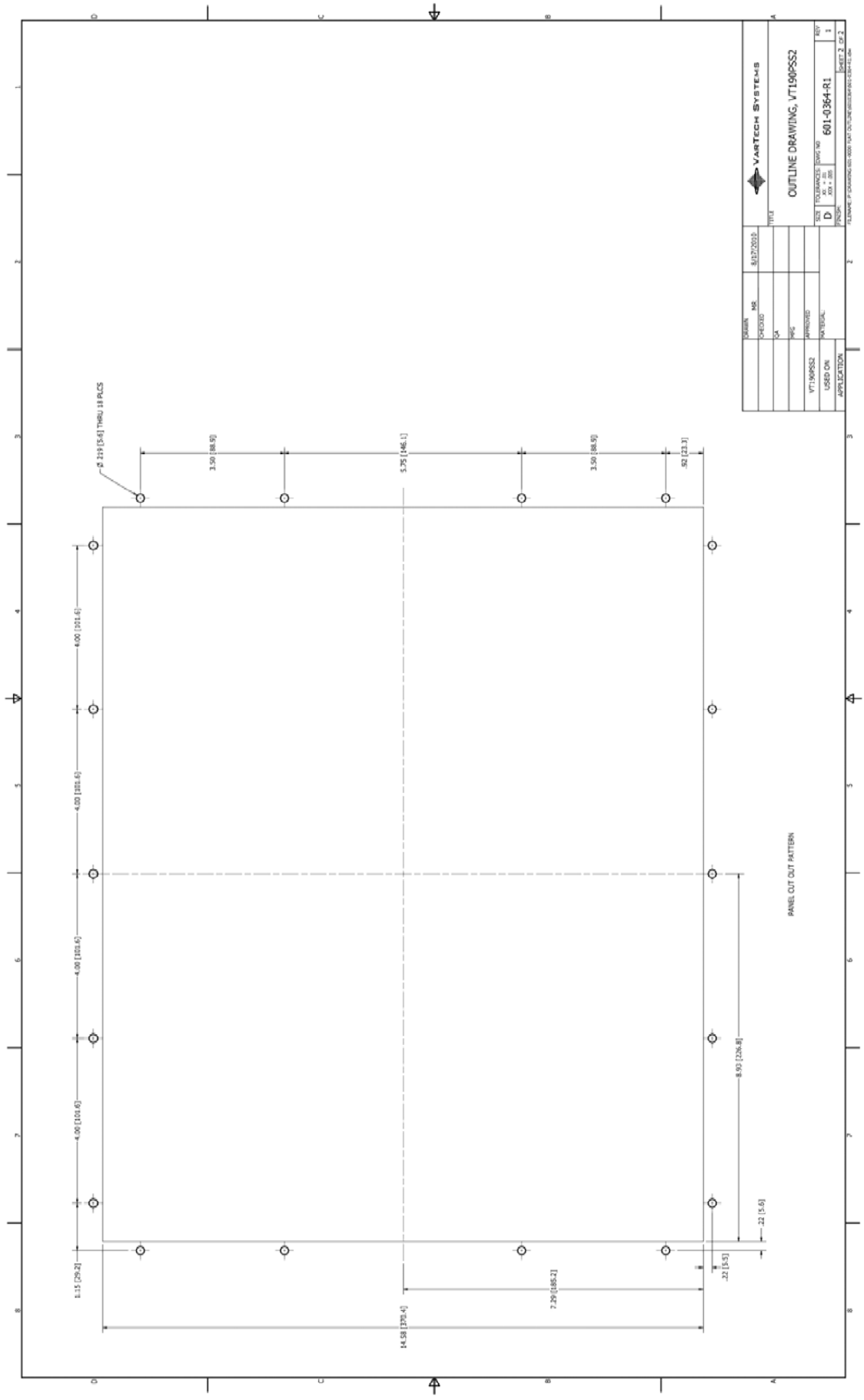

REAR VIEW
SIDE VIEW
FRONT VIEW
CONNECTION VIEW
OUTLINE DRAWING, 19" OPEN FRAME
DIAMONDVUE, VT190C2
601-0360 R1
NOTES:
1. ALL DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY. THIS DRAWING SHOULD NOT BE USED FOR DESIGN PURPOSES.

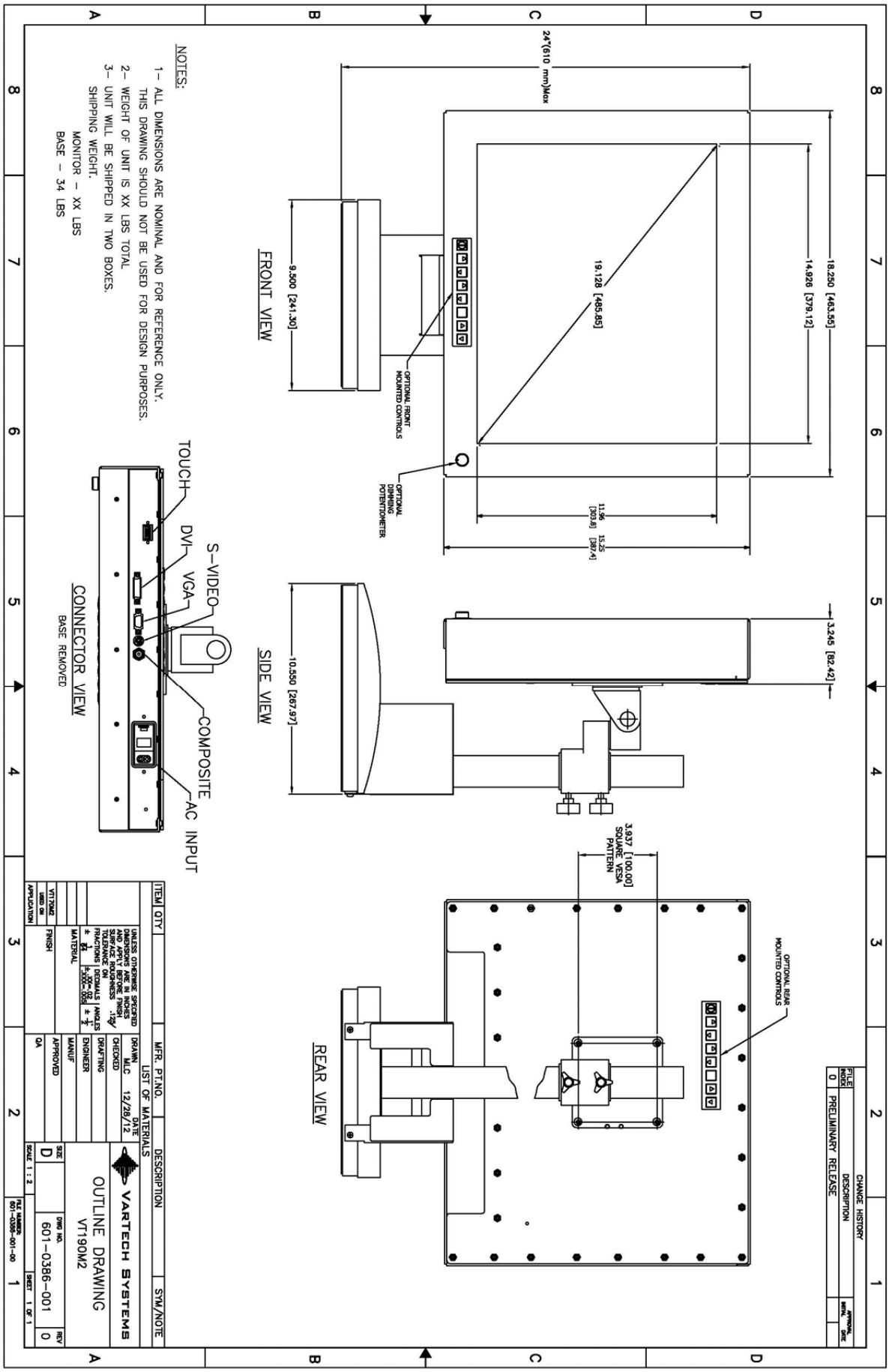

VARTECH SYSTEMS
OUTLINE DRAWING, 19" OPEN FRAME
DIAMONDVUE, VT190C2
601-0360 R1
CONSLOE CUT OUT PATTER
SCALE 1 : 1
14.93 [379.1]
11.96 [303.8]
1.47 [37.4]
.98 [24.9]
11.00 [279.4]


OPTIONAL REAR CONTROLS
REAR VIEW
AC INPUT
CONNECTOR VIEW
SIDE VIEW
FRONT CONTROLS
FRONT VIEW
VARTECH SYSTEMS
OUTLINE DRAWING, VT190W
601-0361
NOTES:
1. ALL DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY. THIS DRAWING SHOULD NOT BE USED FOR DESIGN PURPOSES.


OUTLINE DRAWING, VT190R2
601-0362-R1
VARTECH SYSTEMS
REAR VIEW
SIDE VIEW
FRONT VIEW
CONNECTION VIEW
DETAIL A
SCALE 1.11 : 1
OPTIONAL REAR CONTROLS
FRONT CONTROLS
AC INPUT
POWER
TOUCH
VGA
DVI
S-VIDEO
COMPOSITE
15.719 [399.3]
11.962 [303.8]
DISPLAY AREA
14.302 [363.3]
2.897 [73.6]
.250 [6.4]
.500 [12.7]
9.492 [241.1]
14.026 [379.1]
DISPLAY AREA
18.994 [482.3]
17.482 [444.0]
7.860 [199.6]
NOTES:
1. ALL DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY. THIS DRAWING SHOULD NOT BE USED FOR DESIGN PURPOSES.


REAR VIEW
SIDE VIEW
FRONT VIEW
CONNECTOR VIEW
VARTECH SYSTEMS
OUTLINE DRAWING, VT190PSS2
601-0364-R1
NOTES:
1. ALL DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY. THIS DRAWING SHOULD NOT BE USED FOR DESIGN PURPOSES.


VARTECH SYSTEMS
OUTLINE DRAWING, VT190PSS2
601-0364-R1
PANEL CUT OUT PATTERN


NOTES:
1- ALL DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY. THIS DRAWING SHOULD NOT BE USED FOR DESIGN PURPOSES.
2- WEIGHT OF UNIT IS XX LBS TOTAL
3- UNIT WILL BE SHIPPED IN TWO BOXES.
SHIPPING WEIGHT.
MONITOR – XX LBS
BASE – 34 LBS
24"(610 mm)Max
18.250 [463.55]
14.926 [379.12]
19.128 [485.85]
9.500 [241.30]
OPTIONAL FRONT MOUNTED CONTROLS
OPTIONAL DIMMING POTENTIOMETER
11.96 [303.8]
15.25 [387.4]
FRONT VIEW
3.245 [82.42]
10.550 [267.97]
SIDE VIEW
TOUCH
DVI
VGA
S-VIDEO
COMPOSITE
AC INPUT
CONNECTOR VIEW
BASE REMOVED
3.937 [100.00] SQUARE VESA PATTERN
OPTIONAL REAR MOUNTED CONTROLS
REAR VIEW
CHANGE HISTORY
FILE REV
DESCRIPTION
APPROVAL
INITIAL
DATE
0
PRELIMINARY RELEASE
ITEM
QTY
MFR. PT.NO.
DESCRIPTION
SYM/NOTE
LIST OF MATERIALS
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND APPLY TO FINISHED SURFACE TOLERANCE ON FRACTIONS ± 1/64 DECIMALS .XX ± .02 .XXX ± .005 ANGLES ± 1°
MATERIAL
FINISH
DRAWN MLC 12/28/12
CHECKED
DRAFTING
ENGINEER
MANUF
APPROVED
QA
VT170M2
USED ON APPLICATION
VARTECH SYSTEMS
OUTLINE DRAWING
VT190M2
SIZE D
DWG NO. 601-0386-001
REV 0
SCALE 1 : 2
SHEET 1 OF 1
FILE NAME= 601-0386-001-00

VARTECH SYSTEMS INC.
HEADQUARTERS
6399 Amp Drive, Clemmons, NC 27012
Toll-Free: 800.223.8050
International Phone: 001.225.298.0300
Fax: 225.297.2440

E-mail: sales@vartechsystems.com

www.vartechsystems.com